

Claims

1. A conveyor system, comprising:
 - a delivery tube having an intake end and a discharge end,
 - an endless conveyor belt having a top surface and a bottom surface, wherein a delivery portion of said endless belt is positioned within said tube and wherein a return portion of said endless belt is positioned outside said tube,
 - a drive assembly mechanically connected to said endless belt for rotating said endless belt for moving it in said tube from the intake to the discharge end, and
 - a plurality of mechanical conveyor means projecting from said top surface of said endless belt,wherein the conveyor system also comprises:
 - a return tube extending along the delivery tube for receiving said return portion of said endless belt, and
 - means adapted to guide said endless belt into said return tube with the bottom surface of the belt following at least the upper portion of the return tube when moving through the return tube,wherein said return tube is designed and dimensioned with respect to the width of said belt so as to support transversal end portions of the belt by return tube portions from below when the belt moves through the return tube while following the upper portion thereof.
2. The conveyor system of claim 1, wherein said return tube has a substantially circular cross-section and an inner perimeter exceeding the width of said endless belt but being less than twice said width.
3. The conveyor system of claim 2, wherein said return tube has an inner perimeter being less than 180 percent of the width of said endless belt.

4. The conveyor system of claim 2, wherein said return tube has an inner perimeter being less than 140 percent of the width of said endless belt.
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5. The conveyor system of claim 2, wherein said return tube has an inner perimeter being less than 120 percent of the width of said endless belt.
- 10 6. The conveyor system of claim 2, wherein the inner diameter of the return tube is smaller than the inner diameter of the delivery tube.
- 15 7. The conveyor system of claim 1, wherein said return tube is arranged below said delivery tube.
- 20 8. The conveyor system of claim 1, wherein it further comprises means adapted to blow air into the return tube at locations to be covered by the bottom surface of said endless belt for reducing the friction between the internal walls of the return tube and at least one portion of said endless belt while travelling through the return tube.
- 25 9. The conveyor system of claim 1, wherein it further comprises means adapted to blow air into the delivery tube at locations to be covered by the bottom surface of said endless belt for reducing the friction from the internal walls of the delivery tube on the bottom surface of said endless belt when travelling through the delivery tube.
- 30 10. The conveyor system of claim 1, wherein said conveyor means are arranged on said top surface of the endless belt in transversal rows spaced in the longitudinal direction of the belt.

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11. The conveyor system of claim 1, wherein said conveyor means are adapted to push material located on said top surface of said endless belt downstream thereof as seen in the feeding direction of said endless belt from the intake end to the discharge end of the delivery tube.
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12. The conveyor system of claim 1, wherein said delivery tube is adapted to be arranged with said discharge end at a higher level than said intake end.
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13. The conveyor system of claim 1, wherein the delivery tube and/or the return tube has a longitudinal extension including at least one curved portion.
- 15 14. A method of transporting material, comprising:
- providing a conveyor system comprising:
 - a delivery tube having an intake end and a discharge end,
 - an endless conveyor belt having a top surface and a bottom surface, wherein a delivery portion of said endless belt is positioned within said tube and wherein a return portion of said endless belt is positioned outside said tube,
 - a drive assembly mechanically connected to said endless belt for rotating said endless belt for moving it in said tube from the intake to the discharge end,
 - a plurality of mechanical conveyor means projecting from said top surface of said endless belt,
 - a return tube extending along the delivery tube for receiving said return portion of said endless belt, and
 - means adapted to guide said endless belt into said return tube with the bottom surface of the belt following at least the upper portion of the return tube when moving through the return tube,
 - wherein said return tube is designed and dimensioned with respect to the width of said belt so
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as to support transversal end portions of the belt by return tube portions from below when the belt moves through the return tube while following the upper portion thereof;

- 5 - depositing material on the belt adjacent the intake end of the delivery tube;
 - transporting the material to the output end of the delivery tube by movement of the belt.

10 15. The method of claim 14, wherein the material is transported a distance of about 20 metres to about 200 metres.